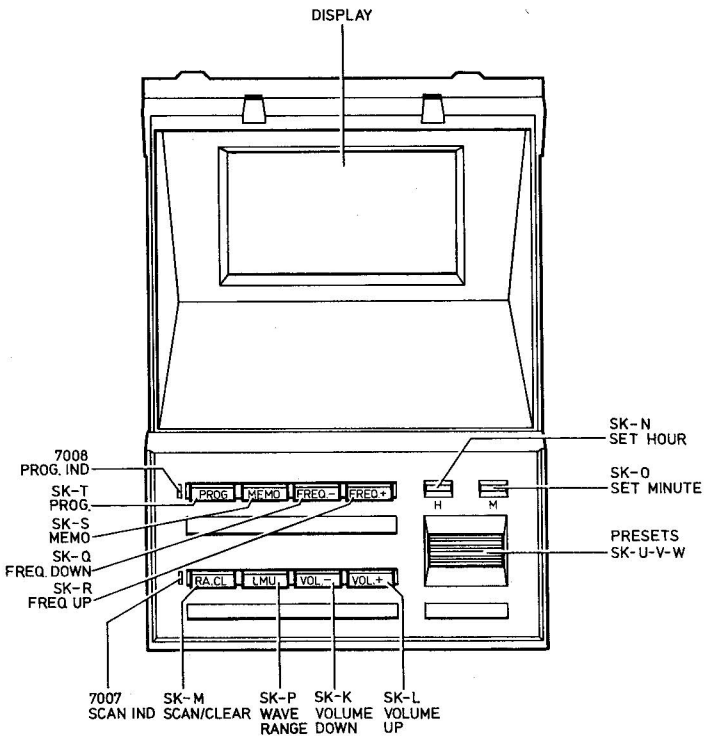
Service
Service
Service

Service Manual

12 V

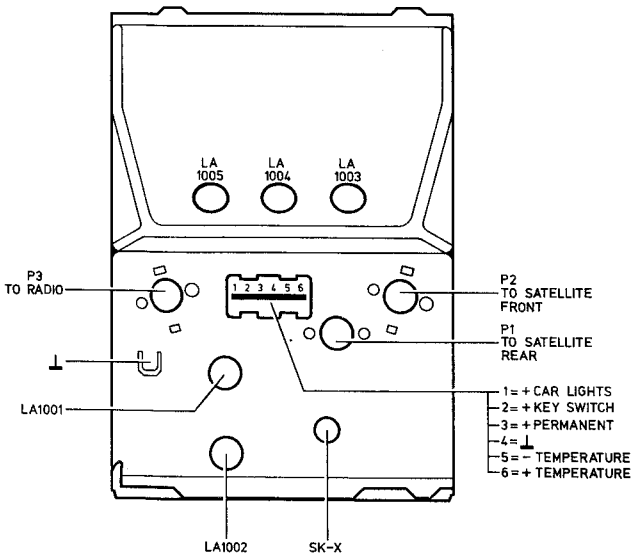


34 778 B12

Documentation Technique Service Dokumentation Documentazione di Servizio Huolte-Ohje Manual de Servicio Manual de Serviçio

Subject to modification
4822 725 20092
Printed in The Netherlands

PHILIPS



34 779 B12

(GB) SERVICING HINTS

A. LA1001-1002

If the control box is not connected with the radio, circuit 7005, 7004 and 1001, 1002 can be tested by connecting pin 26 to ground.

B. Adjustment of clock oscillator

32.78 kHz oscillator 7006 can be adjusted with C2009 and by measuring a frequency of 128 Hz at pin 11 of IC7015.

C. Indication for temperature

After connecting a potentiometer to the +T° (pin 5 of 7013) it is possible to test the temperature indication circuit. Table 1 indicates, which resistance value corresponds with a certain temperature and with the voltages to IC7012 and 7013.

D. SK-X

SK-X consists of a lamp holder with an interconnection, so that pin 4 of 7012 is connected with earth. Now the display shows the temperature in °F and the time with the indication of AM/PM.

(NL) REPARATIEWENKEN

A. LA1001-1002

Als de control box niet verbonden is met de radio kan men het circuit 7005, 7004 en 1001,1002 testen door pen 26 met massa te verbinden.

B. Instellen klokoscillator

De 32,78 kHz oscillator 7006 is in te stellen met C2009 en door een frekwentie van 128 Hz te meten op pen 11 van IC7015.

C. Temperatuur indicatie

Om het temperatuur indicatie circuit te testen is het mogelijk om aan de +T° aansluiting (pin 5 van 7013) een potmeter aan te sluiten. In tabel 1 is aangegeven welke weerstandswaarde overeen komt met een bepaalde temperatuur en de spanningen op IC7012 en 7013.

D. SK-X

SK-X bestaat uit een lamphouder met daarin een doorverbinding aangebracht, waardoor pin 4 van 7012 aan massa gelegd wordt.
Op het display wordt dan de temperatuur aangegeven in °F en de tijd met AM/PM indicatie.

(F) CONSEILS REPARATION

A. LA1001-1002

Lorsque le boîte de commande n'est pas relié à la radio, on pourra tester le circuit 7005, 7004 et 1001, 1002 en reliant la broche 26 à la masse.

B. Réglage de l'oscillateur d'horloge

L'oscillateur de 32,78 kHz, 7006 est réglable par C2009 et mesurable par une fréquence de 128 Hz sur la broche 11 de l'IC7015.

C. Indication de température

Afin de pouvoir tester le circuit d'indication de température, il a moyen de brancher un potentiomètre au +T° (broche 5 de 7013). Au tableau 1 on voit les impédances correspondant à certaines températures et tensions sur les IC7012 et 7013.

D. SK-X

SK-X se compose d'un support de lampe contenant une interconnexion par laquelle la broche 4 de 7012 est mise à la masse.
A l'affichage, la température est alors donnée en °F et l'indication du temps en AM/PM.

(D) REPARATURHINWEISE

A. LA1001-1002

Wenn die Bedienungseinheit nicht mit dem Rundfunkempfänger verbunden ist, lässt sich die Schaltung 7005, 7004 und 1001, 1002 prüfen, indem Anschluss 26 an Masse gelegt wird.

B. Taktoszillator-Einstellung

Der 32,78-kHz-Oszillator 7006 lässt sich mit C2009 einstellen und durch eine Frequenz von 128 Hz an Anschluss 11 von IC7015 messen.

C. Temperaturanzeige

Die überprüfung der Temperaturanzeigeschaltung ist möglich, nachdem ein Potentiometer an +T° (Stift 5 von 7013) angeschlossen ist. Tabelle 1 zeigt welcher Widerstandswert mit einer bestimmten Temperatur und mit den Spannungen an IC7012 und 7013 übereinstimmt.

D. SK-X

SK-X besteht aus einer Lampenfassung mit einer Durchverbindung, so dass Stift 4 von 7012 mit Masse verbunden ist. Jetzt lässt die Anzeige die Temperatur in °F und die Zeit mit der Indikation AM/PM sehen.

(I) CONSIGLI RIPARAZIONE

A. LA1001-1002

Quando la cassa di controllo non è collegata alla radio, si potrà controllare il circuito 7005, 7004 e 1001, 1002 mentre ci si collega il perno 26 con la massa.

B. Regolazione dell'oscillatore d'orologio

L'oscillatore di 32,78 kHz, 7006 è regolabile con C2009 e misurabile con una frequenza di 128 Hz sulla spina 11 dell'IC7015.

C. Indicazione di temperatura

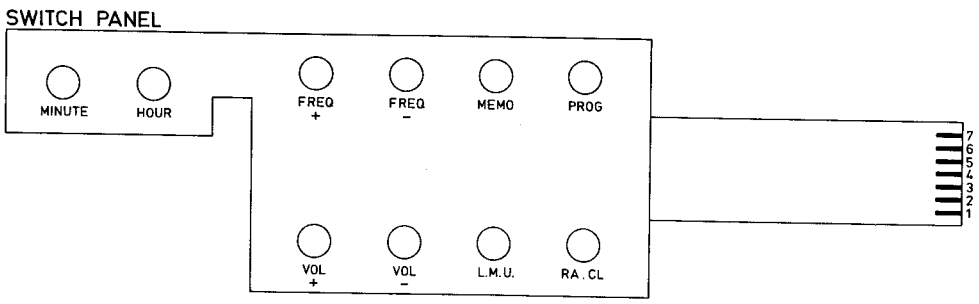
In modo di poter controllare il circuito d'indicazione delle temperature, si può collegare un potenziometro a +T° (perno 5 di 7013). Nella tabella 1 si discerne le impedenze che corrispondono a certe temperature e tensioni sugli IC7012 e 7013.

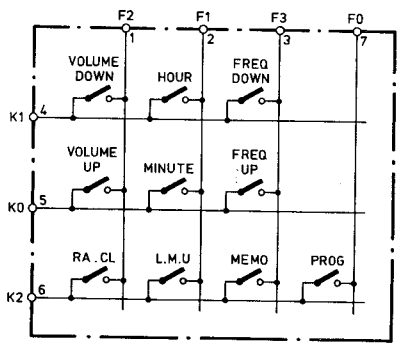
D. SK-X

SK-X comprende un portalampada che contiene un collegamento con il quale il perno 4 è messo a massa. Al display la temperatura viene allora data in °F e l'indicazione del tempo in AM/PM.

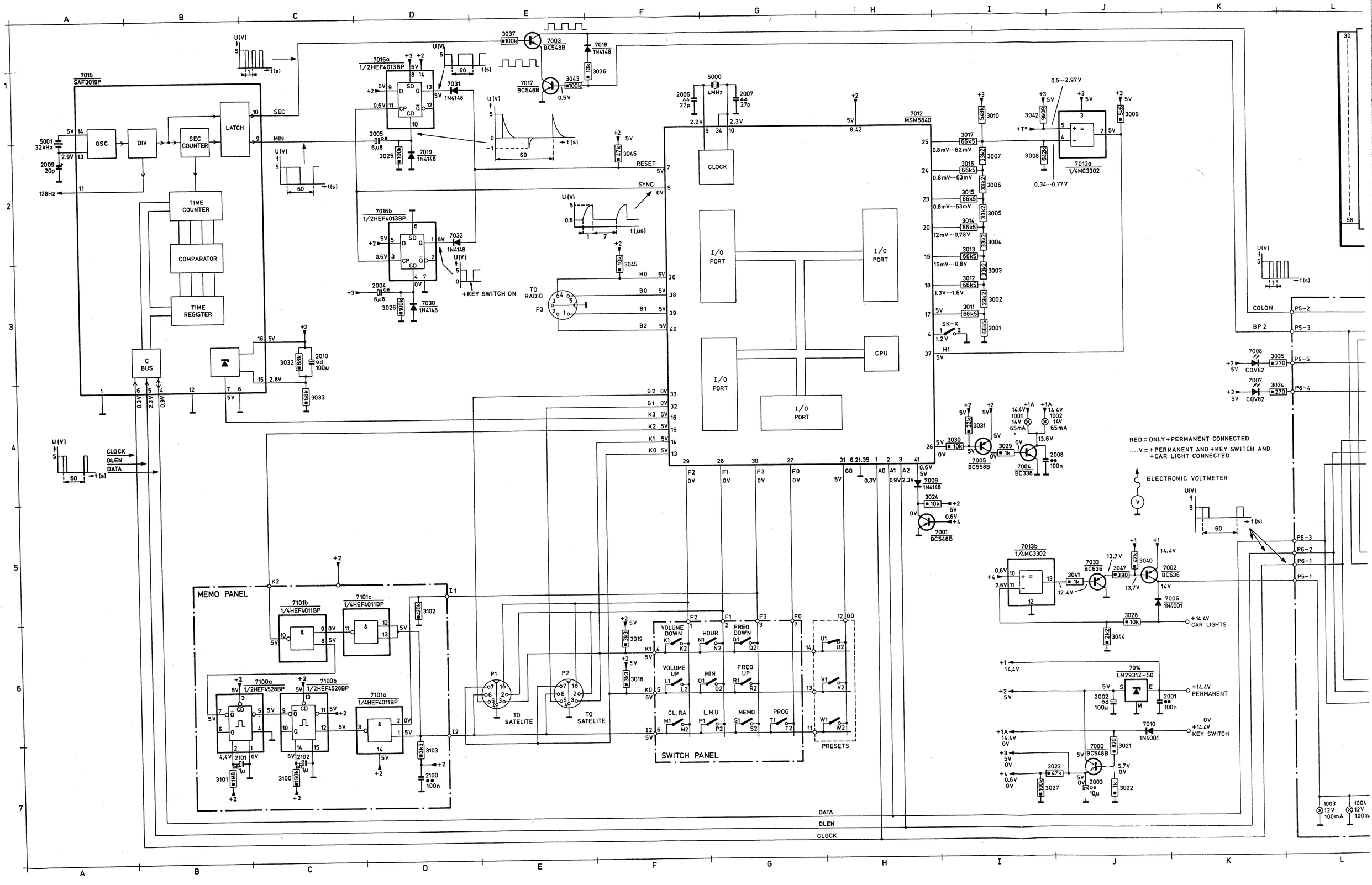
Temp. °C	Temp. °F	R (kΩ)	IC7013 Pin 5 (V)	IC7013 Pin 4 (V)	IC7012 Pin 25 (mV)
−30	−22	13,34	2,97	0,77	300
−25	−13	12,24	2,87	0,72	250
−20	− 4	11,05	2,74	0,69	180
−15	5	9,82	2,60	0,65	95
−10	14	8,59	2,43	0,59	1,6
− 5	23	7,41	2,25	0,56	1,55
0	32	6,32	2,05	0,50	1,5
+ 5	41	5,34	1,85	0,48	1,45
+10	50	4,47	1,65	0,45	1,38
+15	59	3,73	1,45	0,42	1,30
+20	68	3,10	1,27	0,39	1,25
+25	77	2,57	1,10	0,38	1,20
+30	86	2,13	0,95	0,37	1,18
+35	95	1,77	0,81	0,36	1,15
+40	104	1,47	0,69	0,35	1,05
+45	113	1,22	0,59	0,34	0,95
+50	122	1,02	0,50	0,33	0,80

Table 1

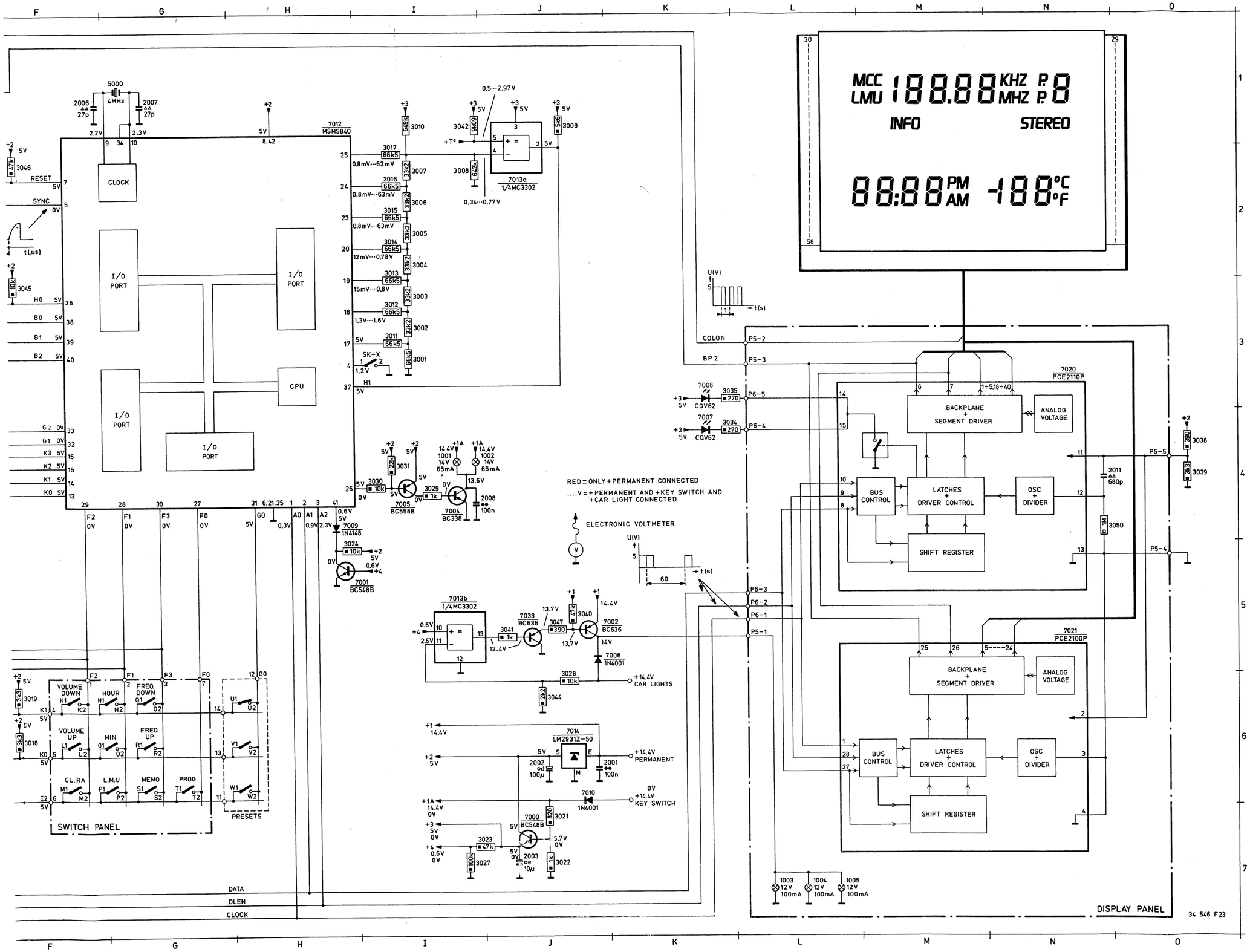




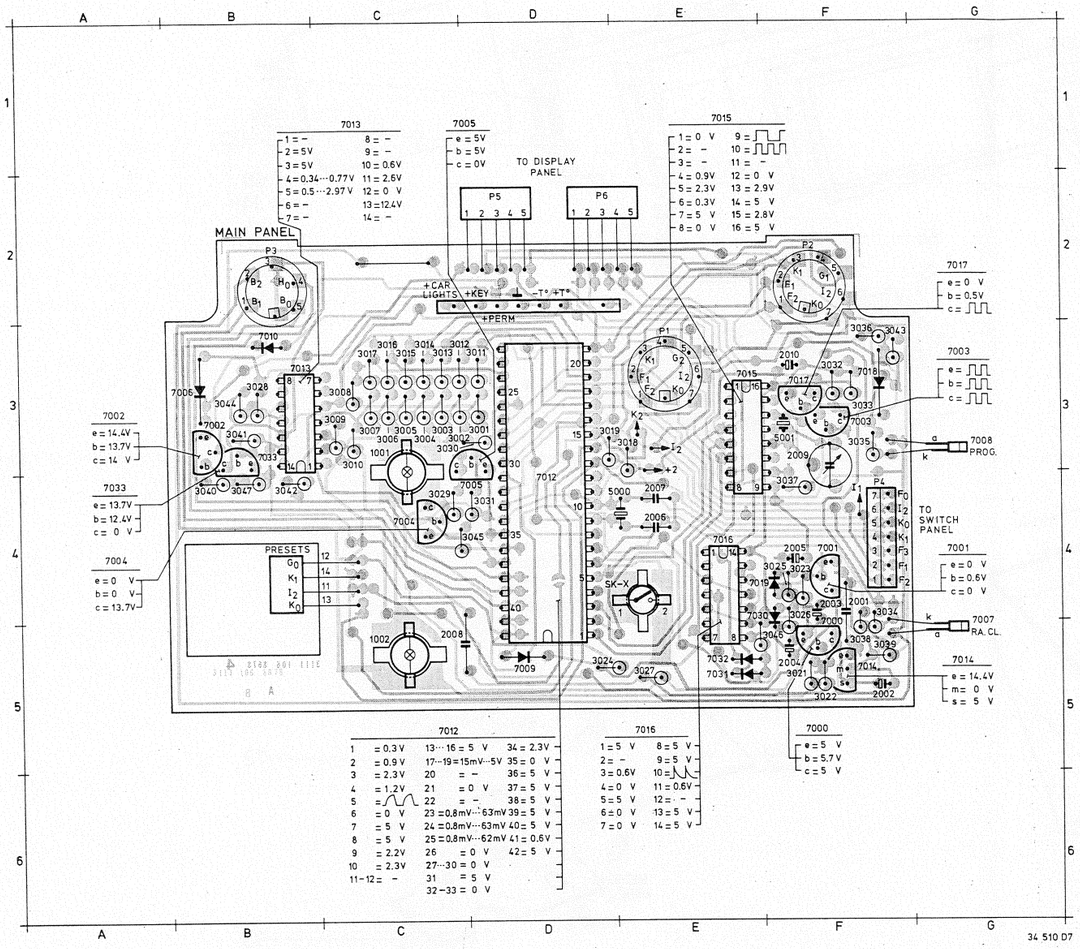
34 545 C23

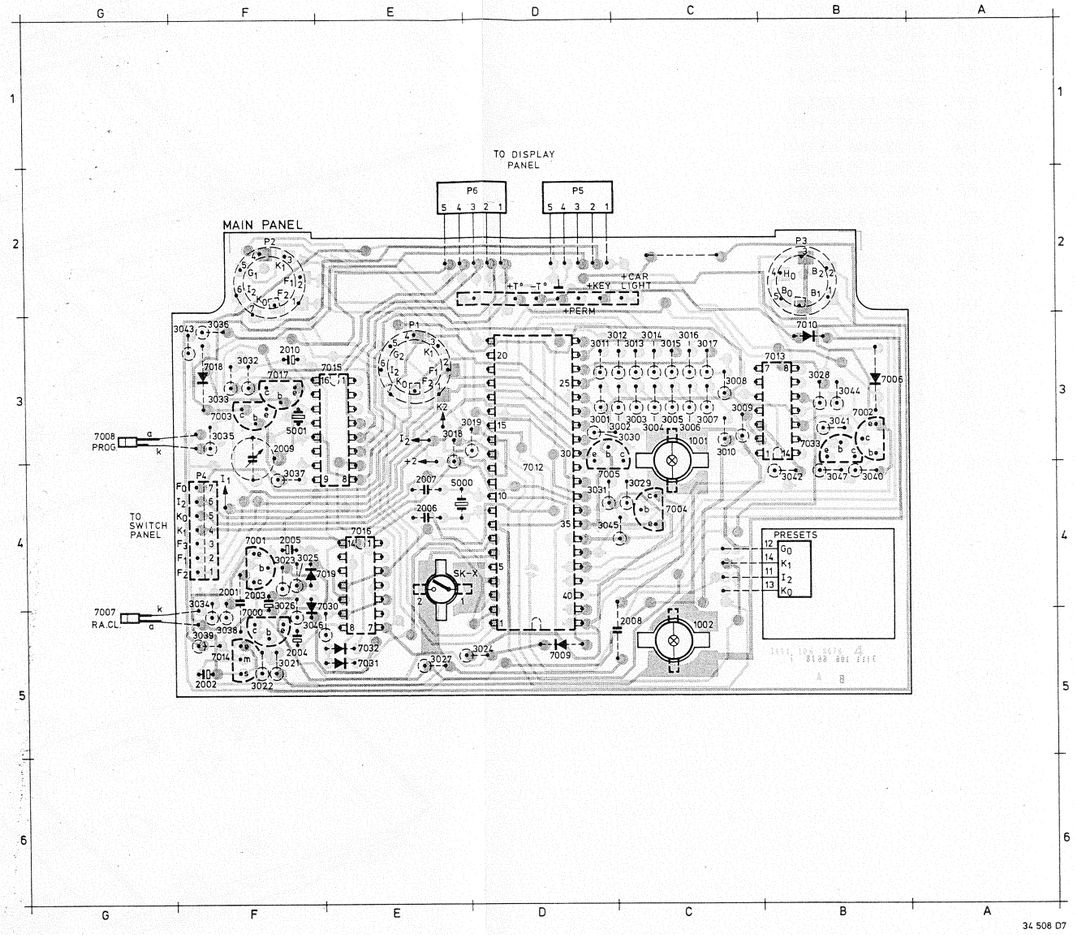

7015
SAF3019P
OSC
DIV
SEC COUNTER
LATCH
TIME COUNTER
COMPARATOR
TIME REGISTER
C BUS
5001 32kHz
2009 20p
128Hz
SEC
MIN
7016a 1/2HEF4013BP
7016b 1/2HEF4013BP
7031 1N4148
7032 1N4148
2005 6µ8
2004 6µ8
3025 100k
3026 100k
7019 1N4148
7030 1N4148
+KEY SWITCH ON
3037 100k
7003 BC548B
7017 BC548B
7018 1N4148
3036 10k
3043 100k
0.5 V
5000 4MHz
2006 27p
2007 27p
CLOCK
RESET
SYNC
7012 MSM5840
3046 47k
3045 10k
TO RADIO
P3
H0
B0
B1
B2
I/O PORT
CPU
3032 68k
2010 od 100µ
3033 68k
3017 66k5
3016 66k5
3015 66k5
3014 66k5
3013 66k5
3012 66k5
3011 66k5
3001 66k5
3007 33k2
3006 33k2
3005 33k2
3004 33k2
3003 33k2
3002 33k2
0.8mV···62mV
0.8mV···63mV
0.8mV···63mV
12mV···0,78V
15mV···0,8V
1.3V···1.6V
SK-X
1.2 V
H1
3010 549k
3009 549k
3042 9k09
3008 642k
7013a 1/4MC3302
0.5···2.97V
0.34···0.77V
+T°
COLON
BP 2
P5-2
P5-3
P6-5
P6-4
7008 CQV62
7007 CQV62
3035 270
3034 270
G2
G1
K3
K2
K1
K0
F2
F1
F3
F0
G0
A0
A1
A2
3031 22k
3030 10k
3029 1k
7005 BC558B
7004 BC338
7009 1N4148
3024 10k
7001 BC548B
14.4V 1001 14V 65mA
14.4V 1002 14V 65mA
13.6V
2008 100n
RED = ONLY + PERMANENT CONNECTED
....V = + PERMANENT AND + KEY SWITCH AND + CAR LIGHT CONNECTED
ELECTRONIC VOLTMETER
CLOCK
DLEN
DATA
MEMO PANEL
7101b 1/4HEF4011BP
7101c 1/4HEF4011BP
7101a 1/4HEF4011BP
7100a 1/2HEF4528BP
7100b 1/2HEF4528BP
3102 470k
3103 3k3
2100 100n
2101 1µ
2102 1µ
3101 1MΩ
3100 150k
P1
P2
TO SATELITE
TO SATELITE
SWITCH PANEL
VOLUME DOWN
HOUR
FREQ DOWN
VOLUME UP
MIN
FREQ UP
CL.RA
L.M.U
MEMO
PROG
PRESETS
3019 3k3
3018 3k3
7013b 1/4MC3302
7033 BC636
7002 BC636
3040 47k
3047 390
3041 1k
7006 1N4001
3028 10k
3044 2k2
+14.4V CAR LIGHTS
7014 LM2931Z-50
2002 od 100µ
2001 100n
+14.4V PERMANENT
7010 1N4001
+14.4V KEY SWITCH
7000 BC548B
3021 820
3023 47k
3027 100k
3022 1k
2003 10µ
1003 12V 100mA
1004 12V 100mA
DATA
DLEN
CLOCK

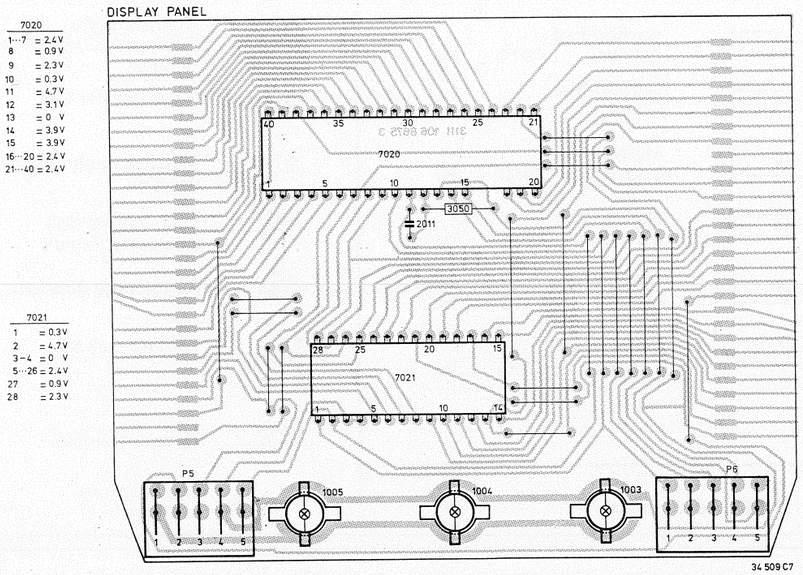
CS 93 965

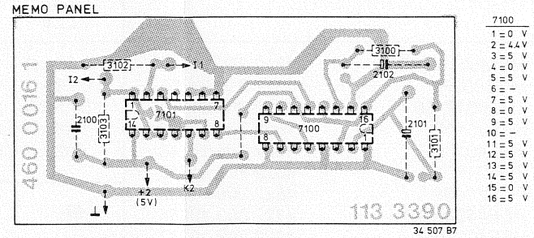


ITEM	CD
P1	E06
P2	E06
P3	E03
1001	I04
1002	I04
1003	L07
1004	L07
1005	L07
2001	J06
2002	J06
2003	J07
2004	D03
2005	D01
2006	F01
2007	G01
2008	I04
2009	A02
2010	C03
2011	N04
2100	D07
2101	B07
2102	C07
3001	I03
3002	I03
3003	I03
3004	I02
3005	I02
3006	I02
3007	I02
3008	I02
3009	J01
3010	I01
3011	I03
3012	I03
3013	I03
3014	I02
3015	I02
3016	I02
3017	I02
3018	F06
3019	F06
3021	J07
3022	J07
3023	I07
3024	H05
3025	D02
3026	D03
3027	I07
3028	J06
3029	I04
3030	I04
3031	I04
3032	C03
3033	C04
3035	K03
3036	F01
3037	E01
3038	O04
3039	O04
3040	J05
3041	J05
3042	I01
3043	K04
3044	J06
3045	F03
3046	F02
3047	J05
3050	N04
3100	C07
3101	B07
3102	D05
3103	D07
5000	G01
5001	A01
7000	J07
7001	H05
7002	J05
7003	E01
7004	I04
7005	I04
7006	J05
7007	K04
7008	K03
7009	H04
7010	J06
7012	H01
7013	I05
7014	J06
7015	A01
7017	E01
7018	F01
7019	D02
7020	N03
7021	N05
7030	D03
7031	D01
7032	D02
7033	J05
7013A	J02
7016B	D02
7100A	C06
7100B	C06
7101A	D06
7101B	C05
7106A	D01





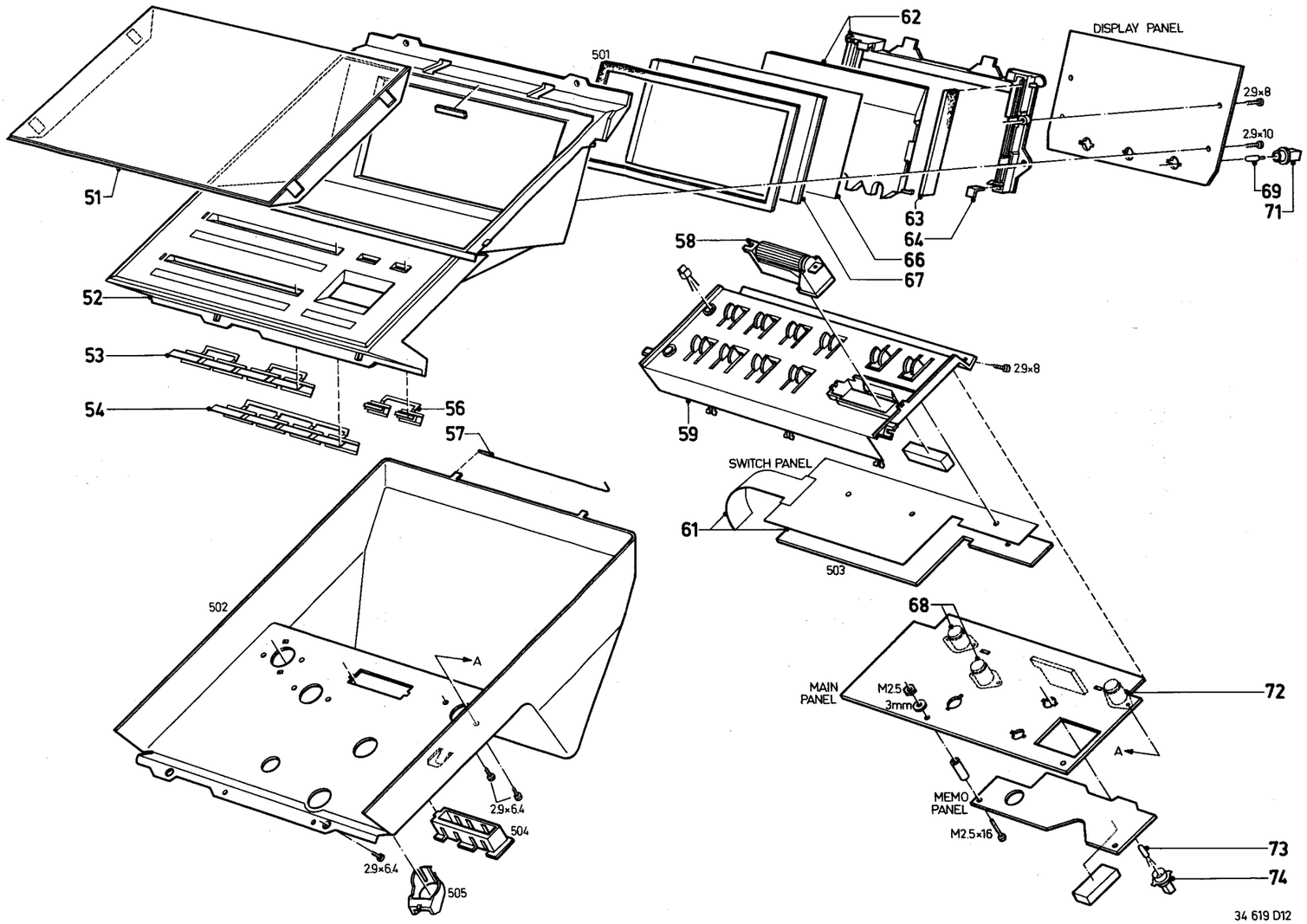




P1	E03	P6	D01	2003	F04	2008	C05	3003	C03	3008	C03	3013	C03	3018	E03	3024	D05	3029	C04
P2	F02	1001	C03	2004	F05	2009	F03	3004	C03	3009	C03	3014	C03	3019	D03	3025	F04	3030	C03
P3	B02	1002	C05	2005	F04	2010	F03	3005	C03	3010	C03	3015	C03	3021	F05	3026	F04	3031	C04
P4	F04	2001	F04	2006	E04	3001	C03	3006	C03	3011	C03	3016	C03	3022	F05	3027	E05	3032	F03
P5	D01	2002	F05	2007	E04	3002	C03	3007	C03	3012	C03	3017	C03	3023	F04	3028	B03	3033	F03
3034	F04	3039	F05	3044	B03	5001	F03	7004	C04	7009	D05	7015	E03	7030	E04				
3035	F03	3040	B04	3045	C04	7000	F05	7005	C04	7010	B03	7016	E04	7031	E05				
3036	F03	3041	B03	3046	F05	7001	F04	7006	B03	7012	D04	7017	F03	7032	E05				
3037	F04	3042	B04	3047	B04	7002	B03	7007	G05	7013	B03	7018	F03	7033	B03				
3038	F05	3043	F03	5000	E04	7003	F03	7008	G03	7014	F05	7019	E04	SK-X	E04				

CS 93 966

51	4822 450 60381
52	4822 420 10231
53	4822 410 23402
54	4822 410 23403
56	4822 410 30337
57	4822 321 30289
58	4822 273 10114
59	4822 464 70312
61	4822 290 60469
62	4822 256 90584
63	4822 290 60468
64	4822 460 10617
66	4822 450 60379
67	4822 130 90171
68	4822 267 50101
69	4822 134 40543
71	4822 255 30103
72	4822 267 40039
73	4822 134 40542
74	4822 255 30105



34 619 D12

IC		
7012	MSM5840HRS	4822 209 81949
7013	MC3302P	5322 209 84453
7014	LM2931Z-50	4822 209 81951
7015	SAF3019P	4822 209 10502
7016	HEF4013BP	4822 209 10248
7020	PCE2110P	4822 209 81336
7021	PCE2100P	4822 209 81952
7100	HEF4528BDB	4822 209 10866
7101	HEF4011BP	4822 209 10247

BC338		4822 130 44121
BC548B		4822 130 40937
BC558B		4822 130 44197
BC636		4822 130 44283
1N4001		4822 130 31438
1N4148		4822 130 30621
CQV62		4822 130 32117
9,09 kΩ 1%		4822 116 51284
33,2 kΩ 1%		4822 116 51259
66,5 kΩ 1%		5322 116 54682
549 kΩ 0,5%		4822 116 52157
642 kΩ 0,5%		4822 116 52158
2009	20 pF trimmer	4822 125 50045

Miscellaneous

5000	Quarts crystal 4 MHz	5322 242 70454
5001	Quarts crystal 32 kHz	4822 242 70416
1001-1002	Lamp 14 V 65 mA	4822 134 40542
1003...1005	Lamp 12 V 100 mA	4822 134 40543
Display		4822 130 90171

CS 93 967

Carbon film 0.2 W	70°C	5%	
Carbon film 0.33 W	70°C	5%	
Metal film 0.33 W	70°C	5%	
Carbon film 0.5 W	70°C	5%	
Carbon film 0.67 W	70°C	5%	
Carbon film 1.15 W	70°C	5%	

Ⓒ Chip component

Ceramic plate Tuning ⩽ 120 pF NP.0		2%
Others		—20/+80%
Polyester flat foil		10%
Metalized polyester flat film		10%
Polyester flat foil small size (Mylar)		10%
Polysterene film/foil		1%
Tubular ceramic		
Miniature single		
Subminiature tantalum		± 20%

*a	= 2,5 V
b	= 4 V
c	= 6,3 V
d	= 10 V
e	= 16 V
f	= 25 V
g	= 40 V
h	= 63 V
j	= 100 V
l	= 125 V
m	= 150 V
n	= 160 V
q	= 200 V
r	= 250 V
s	= 300 V
t	= 350 V
u	= 400 V
v	= 500 V
w	= 630 V
x	= 1000 V
A	= 1,6 V
B	= 6 V
C	= 12 V
D	= 15 V
E	= 20 V
F	= 35 V
G	= 50 V
H	= 75 V
I	= 80 V

27 037A/C

Service
Service
Service **Information**

1984-06-13

Control box 22AP052

A84-319

— From production start R3100 has been changed into 220 kΩ.

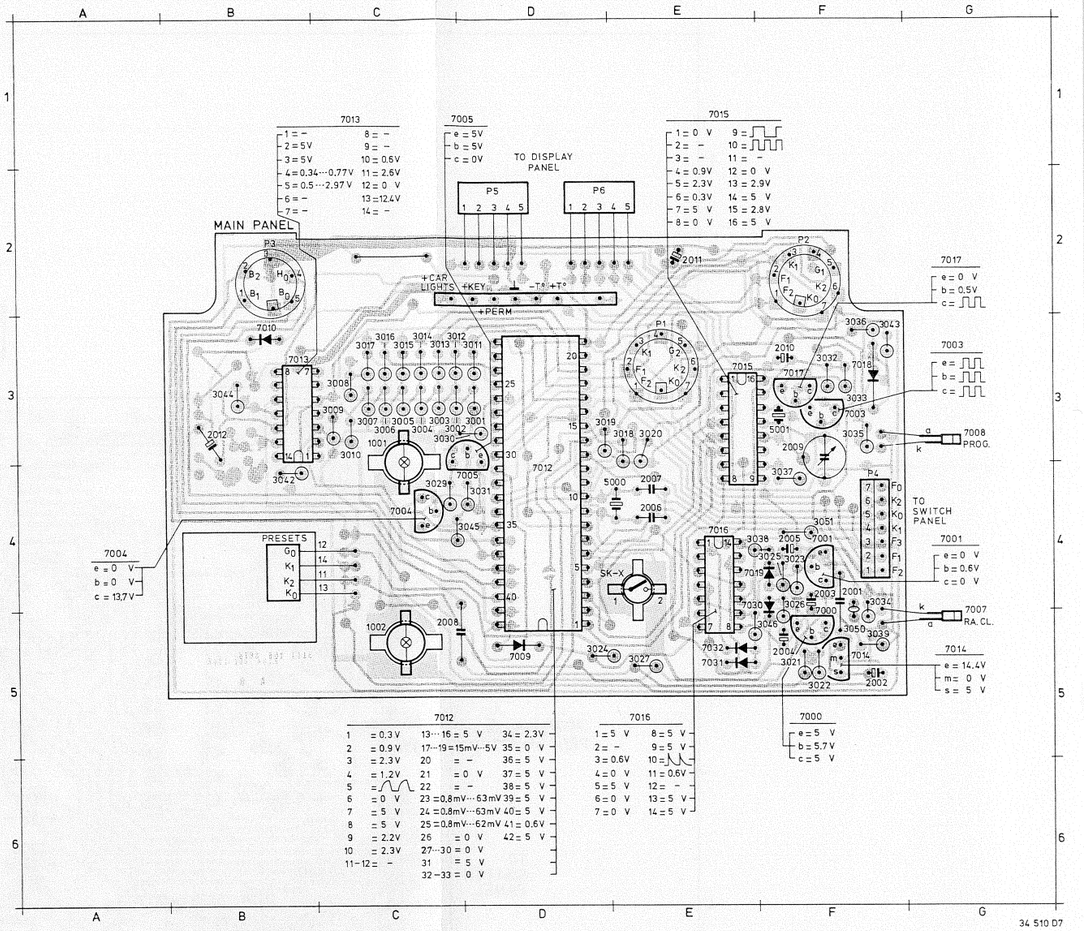
— In sets with factory mark FD00401 and higher the following components have been cancelled: 3028, 3040, 3041, 3047, 7002, 7033. Diode 7006 has been replaced by a jumper.
Reason: the car light connection is now directly connected with the lighting of the display.

— Factory mark FD01 has not been used.

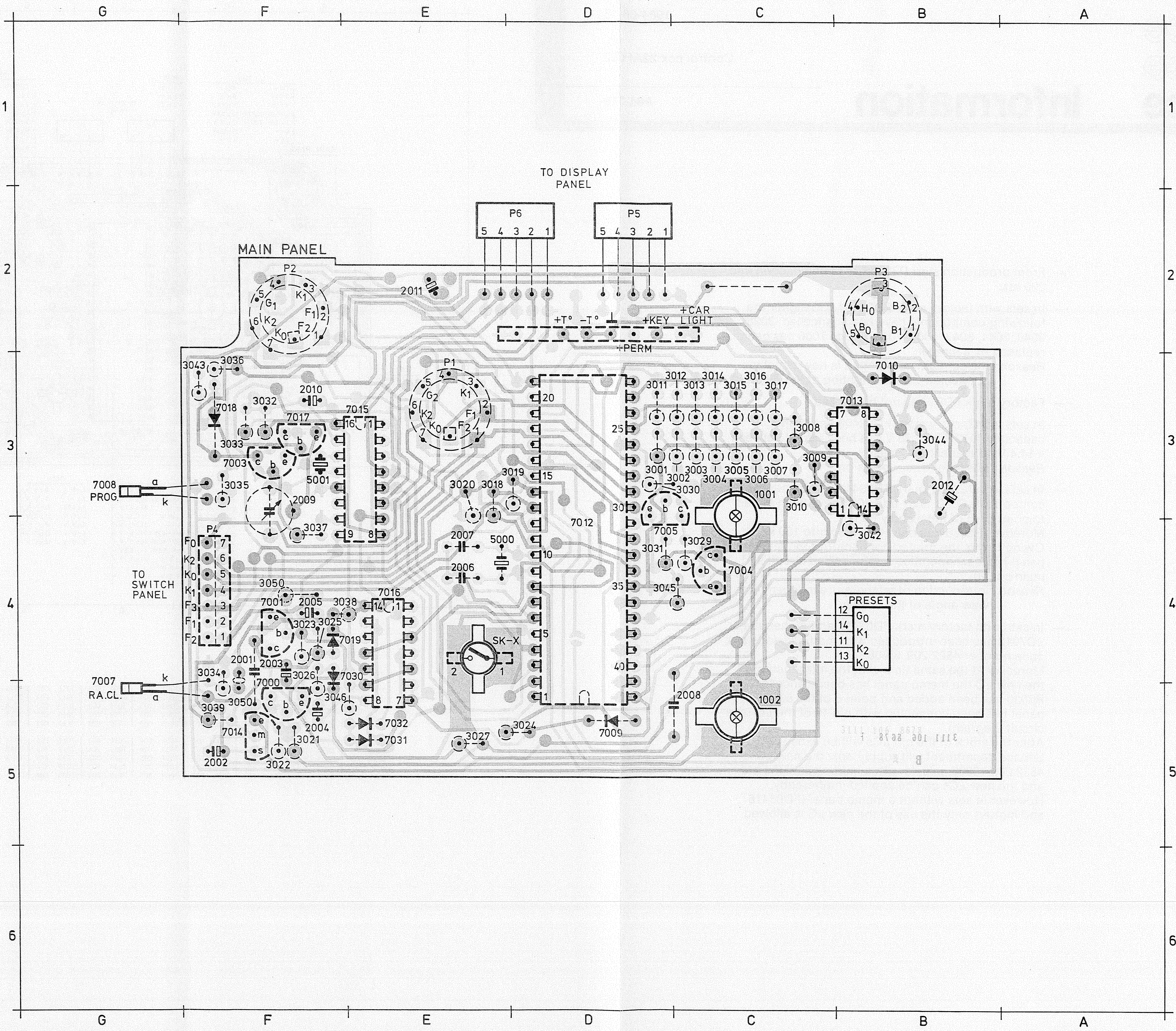
— In sets with factory mark FD02403 and higher, capacitor 2012, 22 μF 25 V has been added between +14,4 V permanent and mass.
Reason: interference suppression.

— In sets with factory mark FD03411 and higher the components 3050, 3051 and 2011 have been added to point P5-5 of the display panel.
Moreover R3036 has been changed into 150 kΩ.
Owing to this the printed conductor of the main panel has been modified (see modified circuit and main panel).
Reason: introduction of temperature independent view angle of the display.

— In sets with factory mark FD03416 and higher a new μC7012 has been introduced with modified software, code number 4822 209 10908.
Moreover at the same time with the introduction of the new μC the memo panel has been cancelled, R3020 has been added and point 6 of the switch panel has been connected with pin 15 of the μC (see circuit diagram).
After the stock of the old μCs will be exhausted, the Service department will supply only the new μC 4822 209 10908. In sets with a memo panel the old and the new μCs can be applied indifferently.
However in sets without a memo panel (FD03416 and higher) only the use of the new μC is allowed.



ITEM	PCB																					
P1	E03	P6	D01	2003	F04	2008	C05	3001	C03	3006	C03	3011	C03	3016	C03	3021	F05	3026	F04			
P2	F02	1001	C03	2004	F05	2009	F03	3002	C03	3007	C03	3012	C03	3017	C03	3022	F05	3027	E05			
P3	B02	1002	C05	2005	F04	2010	F03	3003	C03	3008	C03	3013	C03	3018	E03	3023	F04	3029	C04			
P4	F04	2001	F04	2006	E04	2011	E02	3004	C03	3009	C03	3014	C03	3019	D03	3024	D05	3030	C03			
P5	D01	2002	F05	2007	E04	2012	B03	3005	C03	3010	C03	3015	C03	3020	E04	3025	F04	3031	C04			
3032	F03	3037	F04	3044	B03	5000	E04	7004	C04	7010	B03	7016	E04	7031	E05							
3033	F03	3038	F05	3045	C04	5001	F03	7005	C04	7012	D04	7017	F03	7032	E05							
3034	F04	3039	F05	3046	F05	7000	F05	7007	G05	7013	B03	7018	F03	SK-X	E04							
3035	F03	3042	B04	3050	E05	7001	F04	7008	G03	7014	F05	7019	E04									
3036	F03	3043	F03	3051	F04	7003	F03	7009	D05	7015	E03	7030	E04									



ITEM	PCB	ITEM	PCB
P1	E03	3032	F03
P2	F02	3033	F03
P3	B02	3034	F04
P4	F04	3035	F03
P5	D01	3036	F03
P6	D01	3037	F04
1001	C03	3038	F05
1002	C05	3039	F05
2001	F04	3042	B04
2002	F05	3043	F03
2003	F04	3044	B03
2004	F05	3045	C04
2005	F04	3046	F05
2006	E04	3050	E05
2007	E04	3051	F04
2008	C05	5000	E04
2009	F03	5001	F03
2010	F03	7000	F05
2011	E02	7001	F04
2012	B03	7003	F03
3001	C03	7004	C04
3002	C03	7005	C04
3003	C03	7007	G05
3004	C03	7008	G03
3005	C03	7009	D05
3006	C03	7010	B03
3007	C03	7012	D04
3008	C03	7013	B03
3009	C03	7014	F05
3010	C03	7015	E03
3011	C03	7016	E04
3012	C03	7017	F03
3013	C03	7018	F03
3014	C03	7019	E04
3015	C03	7030	E04
3016	C03	7031	E05
3017	C03	7032	E05
3018	E03	SK-X	E04
3019	D03		
3020	E04		
3021	F05		
3022	F05		
3023	F04		
3024	D05		
3025	F04		
3026	F04		
3027	E05		
3029	C04		
3030	C03		
3031	C04		

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